

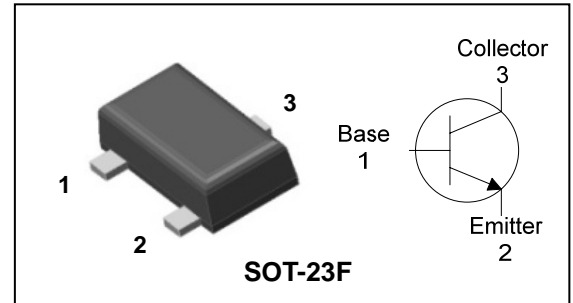
## Descriptions

- General small signal application
- Switching application

## Features

- Low collector saturation voltage
- Collector output capacitance
- Complementary pair with SBT3906F

## PIN Connection



## Ordering Information

Type NO.	Marking	Package Code
SBT3904F	1A □ ① ②	SOT-23F

① Device Code ② Year&Week Code

## Absolute maximum ratings

Ta=25°C

Characteristic	Symbol	Ratings	Unit
Collector-Base voltage	V <sub>CBO</sub>	60	V
Collector-Emitter voltage	V <sub>CEO</sub>	40	V
Emitter-base voltage	V <sub>EBO</sub>	6	V
Collector current	I <sub>C</sub>	200	mA
Collector dissipation	P <sub>C</sub> <sup>*</sup>	350	mW
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature range	T <sub>stg</sub>	-55~150	°C

\* : Package mounted on 99.5% alumina 10×8×0.6mm

## Electrical Characteristics

Ta=25°C

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base breakdown voltage	BV <sub>CBO</sub>	I <sub>C</sub> =10μA, I <sub>E</sub> =0	60	-	-	V
Collector-Emitter breakdown voltage	BV <sub>CEO</sub>	I <sub>C</sub> =1mA, I <sub>B</sub> =0	40	-	-	V
Emitter-Base breakdown voltage	BV <sub>EBO</sub>	I <sub>E</sub> =10μA, I <sub>C</sub> =0	6	-	-	V
Collector cut-off current	I <sub>CEx</sub>	V <sub>CE</sub> =30V, V <sub>EB</sub> =3V	-	-	50	nA
DC current gain	h <sub>FE</sub>	V <sub>CE</sub> =1V, I <sub>C</sub> =10mA	100	-	300	-
Collector-Emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =50mA, I <sub>B</sub> =5mA	-	-	0.3	V
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> =20V, I <sub>C</sub> =10mA, f=100MHz	300	-	-	MHz
Collector output capacitance	C <sub>ob</sub>	V <sub>CB</sub> =5V, I <sub>E</sub> =0, f=1MHz	-	-	4	pF
Delay time	t <sub>d</sub>	V <sub>CC</sub> =3V <sub>dc</sub> , V <sub>BE(off)</sub> =0.5V <sub>dc</sub> , I <sub>C</sub> =10mA <sub>dc</sub> , I <sub>B1</sub> =1mA <sub>dc</sub>	-	-	35	ns
Rise time	t <sub>r</sub>		-	-	35	ns
Storage time	t <sub>s</sub>		-	-	200	ns
Fall Time	t <sub>f</sub>	I <sub>B1</sub> =I <sub>B2</sub> =1mA <sub>dc</sub>	-	-	50	ns

Electrical Characteristic Curves

Fig. 1  $P_C$ - $T_a$

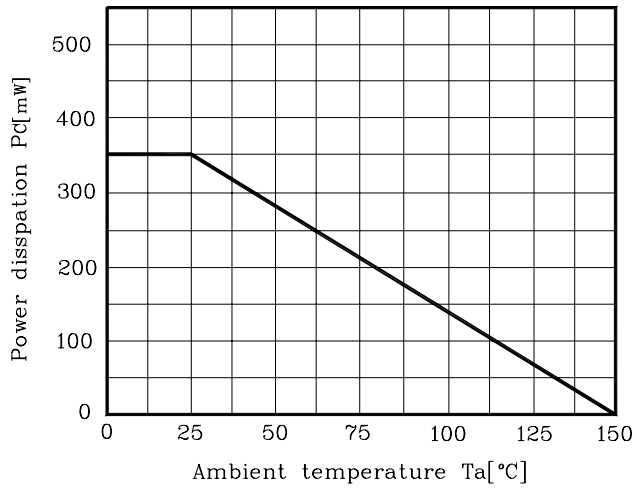


Fig. 2  $h_{FE}$ - $I_C$

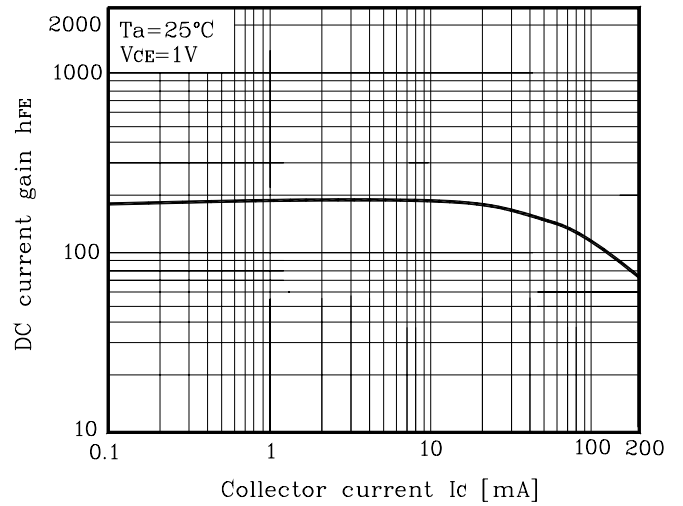
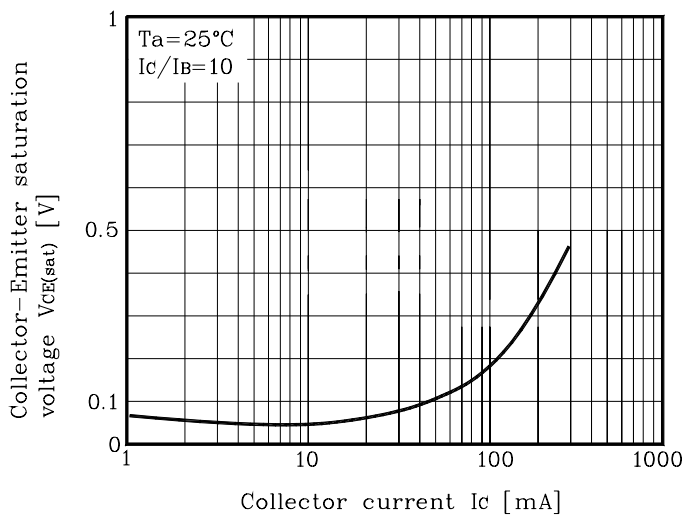
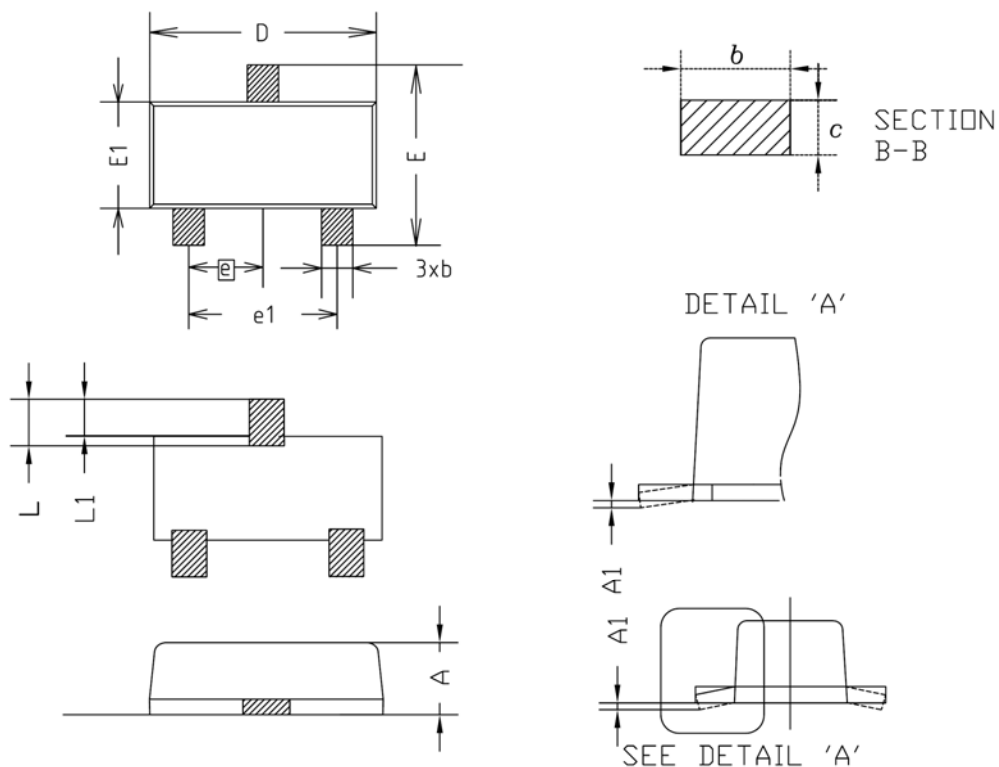


Fig. 3  $V_{CE(sat)}$ - $I_C$

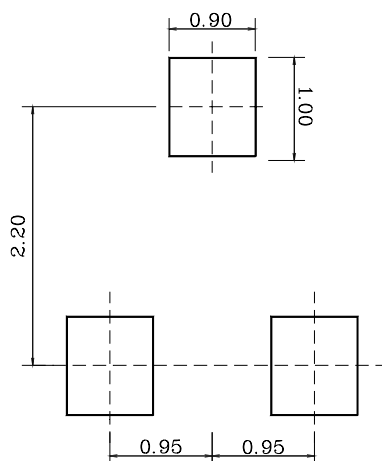


## Outline Dimension



SYMBOL	MILLIMETER(mm)			NOTE
	MINIMUM	NOMINAL	MAXIMUM	
A	0.80	0.90	1.00	
A1	0.00	-	0.10	
b	0.35	0.40	0.45	
c	0.10	0.15	0.20	
D	2.80	2.90	3.00	
E	2.30	2.40	2.50	
E1	1.50	1.60	1.70	
e	0.95BSC			
e1	1.80	1.90	2.00	
L	0.48	0.58	0.68	
L1	0.30	-	0.50	

※Recommend PCB solder land [Unit: mm]



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